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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/653,559
Filing Date: September 02, 2003
Appellant(s): RYKOWSKI ET AL.

____
Aaron J. Poledna
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed April 30, 2008 appealing from the Office action mailed July 24, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,243,059	Greene et al.	6-2001
6,677,958	Cottone et al.	1-2004
6,559,826	Mendelson et al.	5-2003
4,825,201	Watanabe et al.	4-1989
5,479,186	McManus et al.	12-1995
2004/0066515	Ott	4-2004
US 2004/0179208	Hsu	9-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 30 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 31, recites the term "flat-fielded imaging photometer". This term is not found in the specification. Furthermore, this term is not defined in the specification. In the rejection below, the Examiner has interpreted a colorimeter to read on a flat-fielded imaging photometer.

Claim Rejections – 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 4, 10, 12, 13, 16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. (U.S. 6,243,059) in view of Cottone et al. (U.S Patent 6,677,958).

As to **Claim 1**, Greene et al. teaches a method of calibrating a visual display, the method comprising: (a) analyzing a visual display module, the module comprising an array of pixels and corresponding subpixels ***(Col. 17, lines 12-39 and Fig. 8, Reference Number 53)***; (b) locating and registering multiple subpixels of the visual display module ***(Col. 17, lines 25-29 and Col. 16, lines 10-13-note that storing data***

for each subpixel requires locating and registering the subpixels); (c) determining a chromaticity value and a luminance value for each registered subpixel ***(Col. 16, lines 10-13)***. Greene et al. also teaches a target value ***(Col. 16, lines 6-13).*** Greene et al. also teaches (f) calculating correction factors for each registered subpixel based on a difference between the measured chromaticity and luminance values and the target chromaticity and luminance values ***(Col. 15, lines 40-43 and Col. 16, lines 32-42)***; and (g) sending the correction factors to the visual display module ***(Col. 16, lines 35-43)***.

Greene et al. however, does not teach converting the chromaticity and luminance value for each registered subpixel value to measured tristimulus value in step (d) nor does Greene et al. teach converting a target chromaticity value and a target luminance value for a given color to target tristimulus values in step (e). Examiner cites Cottone et al. to teach that the conversion between the CIE chromaticity coordinates (x,y) and luminance value Y into the CIE tristimulus value (XYZ) is well known in the art ***(Cottone—Col. 5, lines 9-15 and 50-52)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to convert the chromaticity and luminance values into tristimulus values as taught by Cottone et al. in the method for calibrating a visual display taught by Greene et al. so as to increase the precision of the color/brightness values. Furthermore it is well known that color can be represented in different formats and any known method of defining color/brightness will perform equally well at helping calibrate a display.

As to **Claim 10**, Greene et al. teaches a method for calibrating a visual display, the method comprising: (a) analyzing a portion of a visual display module, the portion

comprising an array of pixels and corresponding subpixels ***(Col. 17, lines 12-39 and Fig. 8, Reference Number 53)***; (b) locating and registering multiple subpixels within the array ***(Col. 17, lines 25-29 and Col. 16, lines 10-13-note that storing data for each subpixel requires locating and registering the subpixels)*** (c) determining a chromaticity value and a luminance value for each registered subpixel within the array ***(Col. 16, lines 10-13)***; (d) storing the chromaticity value and luminance value for each subpixel ***(Col. 16, lines 10-13)***; (e) repeating steps (a) to (d) for each portion of the visual display module until all portions of the visual display module have been analyzed ***(Col. 17, lines 12-39-note that the colorimeter does a scanning motion to collect the data)***. Greene et al. also teaches a target value ***(Col. 16, lines 6-13).*** Greene et al. also teaches (h) calculating correction factors for each registered subpixel based on a difference between the measured chromaticity and luminance values and the target chromaticity and luminance values ***(Col. 15, lines 40-43 and Col. 16, lines 32-42)***; (i) applying the correction factors to the stored chromaticity and luminance values for each subpixel ***(Col. 16, lines 35-57)***; and (g) calibrating the visual display module with the corrected subpixel values ***(Col. 16, lines 35-43)***.

Greene et al. however, does not teach converting the chromaticity and luminance value for each measured subpixel value to measured tristimulus value in step (f) nor does Greene et al. teach converting a target chromaticity value and a target luminance value for a given color to target tristimulus values in step (g). Examiner cites Cottone et al. to teach that the conversion between the CIE chromaticity coordinates (x,y) and luminance value Y into the CIE tristimulus value (XYZ) is well known in the art

(Cottone—Col. 5, lines 9-15 and 50-52). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to convert the chromaticity and luminance values into tristimulus values as taught by Cottone et al. in the method for calibrating a visual display taught by Greene et al. so as to increase the precision of the color/brightness values. Furthermore it is well known that color can be represented in different formats and any known method of defining color/brightness will perform equally well at helping calibrate a display.

As to **Claim 29**, Greene et al. teaches calibrating the module with the adjusted subpixel values ***(Col. 16, lines 35-43)***.

As to **Claims 4 and 16**, Greene et al. teaches wherein the process in step (c) for determining the chromaticity value and luminance value for each subpixel includes the use of an imaging colorimeter ***(Greene et al.—Fig. 10, Reference Number 35)***.

As to **Claim 13**, Greene et al. teaches the pixels are pixels of a liquid crystal display (LCD) **(Fig. 8, Reference Number 53**).

As to **Claims 3 and 12**, Greene et al. does not teach the picture elements to be light-emitting diodes. Examiner cites Cottone et al. to teach pixels in a display unit comprising of LED's ***(Cottone et al.—Col. 1, lines 15-17)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the light emitting diodes as taught by Cottone et al. in the display device taught by Greene et al. because of their long-term reliability and low power consumption.

5. Claims 2 and 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. and Cottone et al. as applied to claims 1, 3, 4, 10, 12, 13, 16 and 29 above, and further in view of Mendelson et al. (U.S. Patent 6,559,826).

As to **Claim 2 and 11**, Greene et al. as modified by Cottone et al. does not teach (h,k) setting the visual display module image to the color red; (i,l) repeating steps (a) to (f,j); and (l,m) repeating steps (h,k) and (l,l) with the visual display module image set to green, blue, and white. Examiner cites Mendelson et al. to teach setting the visual display module image to the color red, green, blue and white and calibrating the display after each color is set ***(Mendelson—Col. 15, lines 24-52).*** At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to set the visual display module to each primary color including white and provide calibration after each color is set in the method taught by the modified invention of Greene et al. and Cottone in order to provide accurate calibration for the entire display.

6. Claims 8, 9, 20, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. and Cottone et al. as applied to claims 1, 3, 4, 10, 12, 13, 16 and 29 above, and further in view of Ott (USPGPUB 2004/0066515).

As to **Claim 22**, Greene et al. teaches an apparatus for analyzing and calibrating a visual display, comprising: means for capturing an image from a portion of the visual display module ***(Col. 17, lines 12-39 and Fig. 8, Reference Number 53)***; means for determining a chromaticity and a luminance value for a plurality of subpixels from the captured image ***(Col. 16, lines 10-13)***; Greene et al. also teaches a target value ***(Col.***

16, lines 6-13); and means for adjusting chromaticity and luminance values for each subpixel to correspond with the target chromaticity and luminance values ***(Col. 16, lines 35-57)***.

Greene et al. however, does not teach converting the chromaticity and luminance value for each of the subpixels to measured tristimulus values nor does Greene et al. teach converting a target chromaticity value and a target luminance value for a given color to target tristimulus values. Examiner cites Cottone et al. to teach that the conversion between the CIE chromaticity coordinates (x,y) and luminance value Y into the CIE tristimulus value (XYZ) is well known in the art ***(Cottone—Col. 5, lines 9-15 and 50-52)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to convert the chromaticity and luminance values into tristimulus values as taught by Cottone et al. in the method for calibrating a visual display taught by Greene et al. so as to increase the precision of the color/brightness values. Furthermore, it is well known that color can be represented in different formats and any known method of defining color/brightness will perform equally well at helping calibrate a display.

Finally, Greene et al. as modified by Cottone et al. do not teach the visual display module positioned within a testing station. Greene et al. as modified by Cottone et al. however, do not limit where the method takes place. Examiner cites Ott to teach a measuring device ***(Fig. 1, 1)*** used to determine pixel-by-pixel measurements. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a test station as taught by Ott in the calibration of the

visual display taught by Greene et al. as modified by Cottone et al. in order to obtain precise measurements.

As to **Claims 8, 9, 20 and 21**, Greene et al. as modified by Cottone et al. do not teach steps (a)-(g/l) taking place within a test station or darkroom. Greene et al. as modified by Cottone et al. however, do not limit where the method takes place. Examiner cites Ott to teach a measuring device ***(Fig. 1, 1)*** used to determine pixel-by-pixel measurements. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a test station as taught by Ott in the calibration of the visual display taught by Greene et al. as modified by Cottone et al. in order to obtain precise measurements. Furthermore it would have been obvious to a person of ordinary skill in the art to calibrate a module at a test station, darkroom or any environment with ideal conditions that would produce the best test results.

7. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al., Cottone et al. and Ott as applied to claims 8, 9, 20, 21 and 22 above, and in further view of Hsu (USPGPUB 2004/0179208).

As to **Claims 23 and 24**, Greene et al. teaches an optical measuring device ***(Fig. 10, Reference Number 35)*** for capturing the image from a portion of the visual display; however, Greene et al. as modified by Cottone et al. and Ott; however, does not teach the image-capturing device comprising a CCD (or CMOS) digital camera and lens. Examiner cites Hsu to teach an optical sensor ***(Fig. 2, Reference Numbers 3 and 4)***

composed of a CCD (or CMOS) digital camera ***(Page 1, ¶ 11)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the CCD or CMOS digital camera as taught by Hsu in the modified capturing means taught by Greene et al. and Cottone et al. and Ott in order to accurately produce high-quality images.

8. Claims 7, 17, 18, 19 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. and Cottone et al. as applied to claims 1, 3, 4, 10, 12, 13, 16 and 29 above, and further in view of Watanabe et al. (U.S. Patent 4,825,201).

As to **Claims 7 and 19**, Greene et al. as modified by Cottone et al. fails to teach the process in step (g/i) for sending the correction factors to the visual display module comprises uploading the corrected subpixel values to firmware and/or software controlling the visual display module. Examiner cites Watanabe et al. to teach sending the correction factors to the visual display module comprising uploading the corrected subpixel values to firmware and/or software controlling the visual display module ***(Watanabe et al.—Fig. 6, ROM3 and Col. 6, lines 11-21)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate uploading the corrected subpixel values to firmware and/or software controlling the visual display module as taught by Watanabe et al. in the visual display device taught by Greene et al. and Cottone et al. in order to make the system more modifiable.

As for **Claim 17**, Greene et al. as modified by Cottone et al. fails to teach storing the chromaticity and luminance value for each subpixel in a database. Examiner cites Watanabe to teach storing pixel data in a database ***(Fig. 3, E^2 Prom, Col. 4, lines 48-49)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a database as taught by Watanabe et al. in the visual display device taught by Greene et al. and Cottone et al. so that the organized data may be easily accessed, managed and updated.

As to **Claim 18**, Greene et al. teaches calculating correction factors for each subpixel using a computer ***(Col. 13, lines 12-18)***. Greene et al. as modified by Cottone et al., however, fails to teach calculating correction factors for each subpixel using software. Examiner cites Watanabe to teach calculating correction factors using software ***(Fig. 6, note ROM3)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of software to calculate correction factors as taught by Watanabe et al. in the visual display device taught by Greene et al. and Cottone et al. so that the system may be more modifiable.

9. Claim 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Greene and Cottone as applied to claims 1, 3-6, 10, 11, 13-15, 18, 22, 23 and 30 above and in further view of Watanabe and McManus et al. (U.S. Patent 5,479,186—hereinafter "McManus").

As to **Claim 30**, most of the claim limitations found in steps A-F have already been discussed with respect to claim 1, with the exception of using a flat-fielded imaging

photometer to locate and register multiple subpixels and the correction factors including a three by three matrix of values that indicates some fractional amount of power to turn on each registered subpixel for a given color. The Examiner cites Greene to teach a flat-fielded imaging photometer locating and registering multiple subpixels ***(Greene et al.—Fig. 10, Reference Number 35)***. Although Greene teaches the correction factors using a matrix ***(Col. 16, lines 1-28)***, he does not teach that the correction factors include a three by three matrix of values that indicates some fractional amount of power to turn on each registered subpixel for a given color. Examiner cites McManus to teach correction factors including a three by three matrix of values that indicates some fractional amount of power to turn on each registered subpixel for a given color ***(Col. 6, lines 16-32)***. At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the use of a 3-by3 matrix indicating a fractional amount of power to turn on each registered subpixel as taught by McManus in the method of calibration taught by Greene, as modified by Cottone, in order to provide consistent calibration for each registered pixel.

10. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al., Cottone et al. and Ott as applied to claims 8, 9, 20, 21 and 22 above, and further in view of Watanabe et al. (U.S. Patent 4,825,201).

As to **Claim 25**, Greene et al. as modified by Cottone et al. and Ott have failed to teach software loaded in an interface, the interface being operably coupled to both the capturing means and the visual display module. Examiner cites Watanabe to teach

software loaded in an interface, the interface being operably coupled to both the capturing means and the visual display module ***(Fig. 6, note ROM3 and Figure 5, Correction-value Determining Device and Controller 8) coupled to both the capturing means (Optical Measuring Device 12) and the Visual Display (Display Unit 1))***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of software to calculate correction factors as taught by Watanabe et al. in the visual display device taught by Greene et al., Cottone et al. and Ott so that the system may be more modifiable.

Furthermore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to couple the interface to both the capturing means and visual display module as taught by Watanabe in the visual display device taught by Greene et al., Cottone et al. and Ott in order to quickly communicate data from one device to the other.

As to **Claim 26**, Greene et al. as modified by Cottone et al. and Ott, have failed to teach calculating correction factors for each subpixel using software. Examiner cites Watanabe to teach calculating correction factors using software ***(Fig. 6, note ROM3)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of software to calculate correction factors as taught by Watanabe et al. in the visual display device taught by Greene et al., Cottone et al. and Ott so that the system may be more modifiable.

(10) Response to Argument

<u>Appellant's Argument</u>

112 Rejection of Claim 30

<u>Examiner's Response</u>

Regarding the Applicants arguments of Sections A1 and A2 found on Pages 8-10 the Examiner withdraws the 112 rejection because support for the "flat-fielded imaging photometer" was found in "Jenkins" which was incorporated by reference on pg. 7 of the specification.

<u>Appellant's Argument</u>

Greene and Cottone fail to teach or suggest all of the features of the claimed method such as

A. determining a chromaticity and a luminance value for <u>each</u> registered subpixel (Emphasis added by Applicant) (Pg. 15, Section 4)

B. calculating correction factors for <u>each</u> registered subpixel <u>based on a difference between the measured tristimulus values and the target tristimulus values for a given color</u>. (Emphasis added by Applicant) (Pg. 15, Section 4)

C. converting the chromaticity and luminance value for each registered subpixel to measured tristimulus values (Pg. 15, first paragraph).

<u>Examiner's Response</u>

A. Greene clearly teaches determining a chromaticity and a luminance value for each registered subpixel. Greene states "Using such a movable colorimeter head 35, **selected pixels** of the display 34 can be turned on and their **color element and full pixel characteristics scanned and measured**, the reference system selected, color or color and brightness correction parameters computed, and all correction data stored into the memory 42 or 42'..." (Emphasis added) (Greene—Col. 17, lines 27-32; See also Col. 13, lines 4-17). The Examiner interprets that the “selected pixels” of Greene read on “each registered subpixel” as recited by Claims 1, 10, 22 and 30. Furthermore, note that not all subpixels have to be registered. The Examiner has interpreted that the selected pixels of Greene (the pixels that are turned on and measured) are the subpixels that are registered.

B. Greene clearly teaches calculating correction factors for each registered subpixel based on a difference between the measured tristimulus values and the target tristimulus values for a given color. Greene states "Using such a movable colorimeter head 35, selected pixels of the display 34 can be turned on and **their color element and full pixel characteristics scanned and measured**, **the reference system selected**, **color or color and brightness correction parameters computed**, and all correction data stored into the memory 42 or 42'..." (Emphasis added) (Greene—Col. 17, lines 27-32; See also Col. 16, lines 32-42). Here, Greene clearly teaches a measured value (their color element and full pixel characteristics scanned and measured) a target value (the reference system selected) and a correction factor based

on the difference between the measured value and the target value (color and brightness correction parameters computed). Furthermore, Greene would not be able to calibrate the display without comparing the reference values with the measured values; wherein the comparison yields the difference between the two values, which leads to a correction value. C. The Appellant teaches that all the values are represented in tristimulus form; therefore, the Examiner referenced Cottone to teach that converting chromaticity and luminance values into tristimulus values is well-known in the art (Cottone--Col. 5, lines 9-15 and 50-52).

Appellant's Argument

D. In contrast with the features of claim 1, Greene specifically discloses that the adjustments or corrections made to various pixels or groups of pixels of a flat panel video display are made to match uniformity requirements of the average human observer. Greene further discloses that such adjustments may not be consistent and pixels in one portion of the display may have luminance values that vary as much as 10-20% from luminance values in another portion of the display. In fact, Greene specifically teaches that "an accurate solution is not needed, because the corrections need to reduce the chromaticity and luminance nonuniformities only below the detection threshold for the average observer." (Greene, 15:63-67; emphasis added.) At best, therefore, Greene discloses that the pixels of a display are adjusted so that they are generally uniform and there are no large differences between adjacent pixels. Nowhere

does Greene disclose or suggest the method of claim 1, which requires calculating correction factors for each registered subpixel of the display <u>based on a difference between the measured tristimulus values and the target tristimulus values for a given color</u> (Pg. 15, Last paragraph).

<u>Examiner's Response</u>

D. Although Greene teaches that "an accurate solution is not needed" (due to the 10-20% difference between pixels), the correction factors are still <u>based on a difference</u> between two values as claimed. (See response to argument B). Furthermore, the Appellant has not claimed any limitations pertaining to the degree of accuracy of the correction factors; therefore, even though there might be a 10-20% difference between pixels, the manner in which the correction factors were calculated still reads on the claim.

<u>Appellant's Argument</u>

E. "Instead, based on the undersigned attorney's review of this reference, it appears that Cottone's measurements capture the spectral output of the entire display using a spectral radiometer, and without locating or registering any individual pixels within the OLED display (Pg. 16, 2nd paragraph).

<u>Examiner's Response</u>

E. With respect to this argument, Greene was used to teach analyzing a visual display sign, locating and registering multiple subpixels, determining a chromaticity and

luminance value for each registered subpixel, calculating correction factors for each registered subpixel base on a difference between the measured and target values, And sending the correction factors to the visual display sign. Greene, however, does not teach the conversion of chromaticity and luminance values to measured tristimulus values nor does Greene teach converting target chromaticity and target luminance values to target tristimulus values. Therefore, the Examiner referenced Cottone to teach that converting chromaticity and luminance values into tristimulus values is well-known in the art (Cottone--Col. 5, lines 9-15 and 50-52). In other words, Greene teaches everything except for the conversion from chromaticity and luminance to tristimulus values. Cottone, on the other hand, was brought in to teach that the conversion from chromaticity and luminance to tristimulus is old and well known in the art.

Appellant's Argument

F. In the present case, even assuming that the applied references teach all of the features of claim 1, which the applicants expressly do not concede, the Examiner has still not articulated an apparent reason why a person of ordinary skill in the art would

have combined the Greene and Cottone references. Instead, in the Final Office Action, the Examiner relies on his own opinion and simply states:

> [I]t would have been obvious to a person of ordinary skill in the art to convert the chromaticity and luminance values into tristimulus values as taught by Cottone et al. in the method for calibrating a visual display taught by Greene et al. so as to increase the precision of color/brightness values. Furthermore, it is well known that color can be represented in different formats and any known method of defining color/brightness will perform equally well at helping calibrate a display.

(Final Office Action pp. 3 and 4.) Such conclusory opinions do not satisfy the articulated reasoning required by case law and recent USPTO directives. Although the Examiner mentions combining Cottone with Greene "so as to increase the precision of color/brightness values," the Examiner has not satisfied the obviousness standard. For example, the Examiner has failed to provide any articulated reasoning as to why it would have been obvious to increase the precision of color/brightness values of Greene according to the combined method of Cottone. Moreover, the Examiner simply alleges that any known method of defining color/brightness will perform equally well, without any explanation of how or why this may be the case. In addition, the applied references <u>do not even suggest</u> the desirability of modifying Greene's method to include converting the chromaticity and luminance values for each pixel to measured tristimulus values or calculating correction factors based on a difference between the measured tristimulus values and the target tristimulus values for a given color, as required in claim 1. In fact, as explained in detail below, Greene teaches away from such a modification.

Rather than articulating an apparent rational reason to modify Greene according to Cottone to arrive at the features of claim 1, the Examiner has used the applicants'

disclosure as a template to selectively identify various elements from the prior art and put them together without consideration of operability or desirability. The Examiner's rationale appears to be nothing more than a thinly veiled use of impermissible hindsight gleaned from the applicants' specification to provide the desirability of the invention. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050-1052 (Fed. Cir. 1988). For at least these reasons, the Examiner has not established a *prima facie* case of obviousness and the combination of Greene and Cottone cannot render independent claim 1 unpatentable. Therefore, the Section 103 rejection of claim 1 should be reversed. (Pgs. 17 and 18)

Examiner's Response

F. The reason provided for combining Greene with Cottone (i.e. to increase the precision of color/brightness values) is a valid motivation. Furthermore, the conversion of chromaticity and luminance values to tristimulus values is simply a conversion, like converting radians to degrees. Lastly, tristimulus values are more precise because the values are in one format as opposed to two (i.e. one luminance value and two chromaticity values).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re*

Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Examiner has provided a valid reason to combine the Cottone reference with the Greene reference which was generally known and available to one of ordinary skill in the art.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

<u>Appellant's Argument</u>

G. Not only has the Examiner failed to provide an apparent rational reason to combine the applied references, these references teach away from the features of claim 1. For example, as mentioned above, Greene specifically emphasizes that "an <u>accurate solution is not needed,</u> because the corrections need to reduce the chromaticity and luminance nonuniformities only below the detection threshold for the average observer." (Greene, 15:63-67; emphasis added.) Greene's disclosure goes into considerable detail concerning various methods to increase the speed of the calculation process since precision is not necessary. (See, e.g., Greene, 15:63-17:9.) For example, Greene discloses that "fast <u>approximate</u> techniques, including adaptive, neural network, or fuzzy

logic-type solutions are possible." (Greene, 15: 67-16:2; emphasis added.) Moreover, Greene discloses various shortcuts that can be used to speed up the calculations since the new values don't have to be precise--they just have to be "below the detection threshold for the average observer." (Greene, 15:64-66.) Furthermore, based on the undersigned's reading of Greene, such precision is outside the scope of Greene and would be far too time-consuming and intensive in light of Greene's teachings. As a result, Greene teaches directly away from the features of claim 1, including converting the chromaticity and luminance values for each <u>subpixel</u> to measured tristimulus values for a given color, and calculating correction factors for <u>each registered subpixel.</u>

Cottone also fails to cure the above-noted deficiencies of Greene. Rather, Cottone appears to only be used in the Final Office Action to support the use of tristimulus values. As explained in detail above, however, Greene teaches directly away from such additional complex calculations because they could increase the time required for processing and provide a much higher level of accuracy than is needed in Greene's method. Thus, a person of ordinary skill in the art at the time the invention was made would not have been motivated to modify Greene's method in light of Cottone to come up with the clamed combination of elements. Therefore, the Section 103 rejection of claim 1 should be reversed. (Pg. 18 and 19)

<u>Examiner's Response</u>

G. There is no mention in the claim that the correction factors are accurate. Furthermore, the correction factors are still <u>based on a difference</u> between two values

as claimed (See response to argument B). Therefore, Greene still reads on the claims 1, 10, 22 and 30 because the claim limitation does not recite that the correction factors have to be accurate. Cottone, on the other hand, was only brought in to show that it is well known in the art to convert chromaticity and luminance values to tristimulus values. Cottone's "complex calculations" do not teach away from Greene's ability to quickly compute correction factors because Greene states that “More time for the computations may be available, if corrections are done only to selected pixels only.” (Greene—Col. 16, lines 59-60). Also, converting luminance and chromaticity values to tristimulus values does not require an excessive amount of time. It is just a conversion, like converting radians to degrees. Furthermore, it is well known that color can be represented in different formats and any known method of defining color/brightness will perform equally well at helping calibrate a display. Therefore, the references used together do not teach away from claim 1.

Appellant’s Argument

H. With respect to the arguments found on pages 20-23 (i.e. sections D-H) the Appellant basically states that each reference (i.e. Mendelson, Ott, Hsu, Watanabe and McManus) fails to disclose or suggest converting the chromaticity value and luminance value for each registered subpixel to measured tristimulus values, and/or converting a target chromaticity value and a target luminance value for a given color to target tristimulus values.

Examiner’s Response

H. Please see the response to sections A-C in this Examiner's Answer. Furthermore, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Rodney Amadiz/

Examiner, Art Unit 2629

Conferees:

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629

/Amr Awad/

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